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7   IN THE UNITED STATES DISTRICT COURT

8   FOR THE NORTHERN DISTRICT OF CALIFORNIA

9   SAN JOSE DIVISION

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11   Avago Technologies General IP PTE, et   NO. C 04-05385 JW
     al.,
12
                Plaintiffs,
13   **ORDER FOLLOWING CLAIM
        v.   CONSTRUCTION PROCEEDINGS;
14   SETTING CASE MANAGEMENT
     Elan Microelectronics Corporation,   CONFERENCE**
15
                Defendant.
16
                                         /
17   I. INTRODUCTION

18   Plaintiff Avago Technologies General IP ("Avago") alleges infringement by Defendant Elan

19   Microelectronics ("Elan") of U.S. Patent Nos. 6,433,780 ('780 patent) and 5,786,804 ('804 patent).

20   Jurisdiction is proper pursuant to 28 U.S.C. §1338(a), and venue is proper pursuant to 28 U.S.C.

21   §1391(b)(1). The Court conducted a claims construction hearing on May 9, 2006. This Order sets

22   forth the Court's construction of the terms and phrases at issue.

23   II. BACKGROUND

24   Agilent Technologies initiated this suit against Elan for infringement of the '780 patent,

25   entitled "Seeing Eye Mouse of a Computer System," and the '804 patent, entitled "Method and

26   System for Tracking Attitude." At the time the action was filed, the '780 patent and the '804 patents

27   were assigned to Agilent. Agilent transferred and assigned its entire right, title, and interest in the

28   '780 patent and the '804 patent to Avago, a Singapore company, during the course of this litigation

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1 (Stipulation and Order, Docket Item No. 57.)

2   According to its papers, Elan is a Taiwanese corporation that researches, develops, and

3 markets integrated circuits used in a variety of third-party electric products. Elan's optical mouse

4 controllers are currently included in the products of a number of brands marketing optical mice.

5   In related case, PixArt v. Agilent, No. 03-4871 ("PixArt"), the Court issued an Order

6 ("PixArt Order") construing a number of terms in the '780 patent. Some of the terms construed in

7 the PixArt Order are currently in dispute. On July 14, 2006, the parties in PixArt filed a stipulated

8 dismissal pursuant to settlement.

9 <div align="center">III. STANDARDS</div>

10   Claim construction is purely a matter of law, to be decided exclusively by the Court.

11 Markman v. Westview Instruments, Inc., 517 U.S. 370, 387 (1996). Claims are construed from the

12 perspective of a person of ordinary skill in the art at the time of the invention. Markman v.

13 Westview Instruments, Inc., 52 F.3d 967, 986 (Fed. Cir. 1995). To determine the meaning of the

14 claim terms, the Court's primary focus should be on the intrinsic evidence, that is, the claims, the

15 specification, and, if in evidence, the prosecution history. Primos, Inc. v. Hunter's Specialties, Inc.,

16 451 F.3d 841, 847-48 (Fed. Cir. 2006). In assessing the intrinsic evidence, the Court must look first

17 to the words of the claims themselves. See Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576,

18 1582 (Fed. Cir. 1996). These words are to be given their ordinary and customary meaning unless it

19 is clear from the specification and prosecution history that the inventor used the term with a different

20 meaning. Id. The claims should be interpreted consistently with the specification. See Renishaw

21 PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998).

22   Where intrinsic evidence alone resolves any ambiguity in a disputed claim term, it is

23 improper to rely on evidence external to the patent and file history. Vitronics, 90 F.3d at 1583,

24 1585. However, extrinsic evidence may be considered where intrinsic evidence is insufficient to

25 enable the court to construe disputed claim terms. Id. at 1585. Common sources of extrinsic

26 evidence include expert testimony, inventor testimony, dictionaries, and technical treatises and

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1 articles. <u>Id.</u> at 1584.

2   IV. DISCUSSION

3 **A.   '780 Patent**

4   Elan, not present at the <u>Markman</u> hearing in <u>PixArt</u>, asks that this Court revisit two of the

5 constructions in the <u>PixArt</u> Order. Because claim construction is a matter of law, the Court

6 considers the parties' arguments in its construction of the disputed terms in this litigation. <u>See</u> <u>Cybor</u>

7 <u>Corp. v. FAS Techs.</u>, 138 F.3d 1448, 1451 (Fed. Cir. 1998). Patent citations in this section refer to

8 the '780 patent unless otherwise indicated.

9   Claim 4 of the '780 patent reads in its entirety as follows:

10   4. A hand held pointing device for a computer system, the pointing device
         comprising: a housing having a bottom surface that moves against a work surface;
11   the housing also having a top surface shaped to receive the human hand; the housing
         also having a skirt connecting a perimeter of the bottom surface with the top surface;
12   the housing also having a first axis extending generally in the direction from where
         the heel of the hand rests on the top surface to where the middle finger rests on the
13   top surface, and a second axis perpendicular to the first, both axes parallel to the
         bottom surface; an aperture in the bottom surface; a source of illumination mounted
14   within the interior of the housing, proximate the aperture, that illuminates a portion
         of the work surface opposite the aperture and having surface height irregularities
15   forming a micro texture with feature sizes in the range of about five to five hundred
         microns, the illumination producing a pattern of highlights upon surface height
16   irregularities that extend out of the desktop surface and that intercept the illumination
         and of shadows upon surface height irregularities that extend into the desktop surface
17   and whose illumination is blocked by adjacent surface height irregularities that are
         illuminated; an optical motion detection circuit mounted within the interior of the
18   housing and optically coupled to the pattern of highlights and shadows from the
         surface height irregularities of the illuminated portion of the work surface, the optical
19   motion detection circuit producing motion signals indicative of motion in the
         directions along the first and second axes and relative to the surface height
20   irregularities of the illuminated portion of the work surface; wherein the optical
         motion detection circuit comprises a plurality of photo detectors each having an
21   output, a memory containing a reference frame of digitized photo detector output
         values and a sample frame of digitized photo detector output values obtained
22   subsequent to the reference frame, and further wherein a plurality of comparison
         frames, each being a shifted version of one of the reference frame or the sample
23   frame, is correlated with the other of the reference frame or the sample frame to
         produce a corresponding plurality of correlation values and ascertain motion in the
24   directions along the first and second axes; and an arithmetic comparison mechanism
         coupled to the plurality of correlation values, and wherein the motion signals are not
25   output to the computer system whenever a correlation surface described by the
         plurality of correlation values fails to exhibit a selected curvature.

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1   1.   "a plurality of comparison frames, each being a shifted version of one of the reference

2   frame or the sample frame, is correlated with the other of the reference frame or the

3   sample frame to produce a corresponding plurality of correlation values and ascertain

4   motion in the directions along the first and second axes"

5   In PixArt, the Court did not construe the entire phrase, but instead referred the parties to the

6 Court's construction of "frame" as "a single image in a sequence of images" and "the correlation

7 being upon the values in all memory array locations that correspond to overlap between the

8 comparison frame and the other of the reference frame or sample frame" as "the operation of

9 comparing at least one shifted sample frame or at least one shifted reference frame with the other of

10 a reference frame or a sample frame being upon all of the values stored in memory that correspond

11 to the area shared between the frames. The comparison provides the degree to which the frames are

12 related. The values that are being compared are numerical representations of the digitized photo

13 detector outputs." Avago proposes that the claim language should be construed as "at least two

14 frames, each generated by shifting a sample frame or a reference frame, are compared with the other

15 of a reference frame or a sample frame to provide the degree to which the frames are related. Such

16 correlations produce numerical representations of the degree of similarity between the frames. Such

17 correlations are also used to ascertain motion in the directions along the first and second axes. A

18 frame refers to a single image in a sequence of images." Elan proposes the following construction:

19 "At least two different comparison frames (images captured by the complete array of photodetectors

20 subsequent to a first image captured by a complete array of photodetectors) compared to either the

21 reference frame (first image) or sample frame (subsequent image) to produce a corresponding

22 number of correlation values and ascertain motion along either axis. Each comparison frame being

23 shifted from the first image or subsequent images with some offset within the array."

24   Elan's proposed definition of "comparison frames" as "images captured by the complete

25 array of photodetectors subsequent to a first image captured by a complete array of photodetectors"

26 is not supported by the specification. As detailed in the specification, the device may track

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1   movement "by comparing a newly captured sample frame with a previously captured reference

2   frame to ascertain the direction and amount of movement," and this comparison may be

3   accomplished by the use of comparison frames where "the comparison frames are temporarily

4   shifted versions of the sample frame." Col. 3, ll. 59-65 - Col. 4, ll. 29-33. In this embodiment, the

5   comparison frames are not limited to the image captured by the complete array of photodetectors --

6   rather, the comparison frames may be the product of an internal operation so that what is captured

7   by the array of photodetectors (a reference frame or a subsequent sample frame) may be correlated

8   to the comparison frame, or the comparison frames may be correlated with each other.

9   Furthermore, Elan's definition of comparison frames excludes the prediction function

10   disclosed in the specification: "For a hand held mouse, several successive collections of comparison

11   frames can usually be obtained from the (16x16) reference frame taken at t0. . . This shifting to

12   accommodate prediction throws away, or removes, some of the reference frame, reducing the size of

13   the reference frame." Col. 5, ll. 14-25. In the prediction operation the comparison frame is derived

14   from the reference frame and is thus neither a complete image, nor technically, an image captured by

15   the array of photosensors.

16   Accordingly, the Court construes "a plurality of comparison frames, each being a shifted

17   version of one of the reference frame or the sample frame, is correlated with the other of the

18   reference frame or the sample frame to produce a corresponding plurality of correlation values and

19   ascertain motion in the directions along the first and second axes" as **"at least two frames, each**

20   **generated by shifting a sample frame or a reference frame, are compared with the other of a**

21   **reference frame or a sample frame to provide the degree to which the frames are related.**

22   **Such correlations produce numerical representations of the degree of similarity between the**

23   **frames. Such correlations are also used to ascertain motion in the directions along the first**

24   **and second axes. A frame refers to a single image in a sequence of images."**

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2.   "arithmetic comparison mechanism coupled to the plurality of correction values, and

wherein the motion signals are not output to the computer system whenever a

correlation surface described by the plurality of correlation values fails to exhibit a

selected curvature"

In the PixArt litigation, the Court construed this claim language to mean: "a device that

executes an algorithm which determines a surface shape by plotting the multiple correlation values

and that blocks the transmission of motion data to the computer system if the result of the algorithm

is that the surface shape is not a suitable curvature." Avago primarily takes issue with the word

"plotting" in this Court's construction. Avago proposes that the claim language above be construed

as "logic that performs arithmetic comparison operations and that receives correlation values.

Wherein signals indicative of actual motion in the directions along the first and second axes and

relative to the work surface height irregularities of the illuminated portion of the work surface are

not communicated to the computer system whenever the mathematical surface produced or

described by the various correlation values does not meet a particular criteria with respect to its

curve or shape. This mathematical surface is a mathematical abstraction insofar as it is merely a

mathematical representation of the distribution of correlation values." Elan contends that

"arithmetic comparison mechanism coupled to the plurality of correlation values" is impossible to

construe because the "arithmetic comparison mechanism" bears no relationship with any other

element of the claim and there is no explanation as to how this mechanism is "coupled" to

correlation values. Elan construes the remainder of the claim language as "motion signals are not

output to the computer whenever the surface shape described by the plotting of the multiple

correlation values fails to exhibit a predetermined curvature of the plotted correlation values."

As to a mechanism being "coupled" to a "plurality of values" the Court invites the parties to

stipulate to a construction or present evidence with respect to this relationship. As to the remainder

of the claim language, to the extent that the parties interpret the Court's use of "plotting" in its

previous construction as "forming an actual graphical representation of the correlation values," such

1   "plotting" is not required by the specification. At a rudimentary level, the Court understands the

2   equation y = 2x to be a linear equation without using graph paper and a ruler. The Court declines to

3   further construe the phrase.

4   3.   "source of illumination"

5   Avago submits that "source of illumination" does not require construction and that the

6   ordinary meaning should apply. Elan proposes that "source of illumination" be construed as "a

7   device that provides illumination at a grazing angle."

8   As detailed in Claim 4, the source of illumination "illuminates a portion of the work surface

9   opposite the aperture" thus "producing a pattern of highlights upon surface height irregularities."

10 Just as the shadows cast by the sun decrease in length as the sun approaches noon, illumination

11 directly perpendicular to the work surface micro texture would be unlikely to produce a "pattern of

12 highlights and shadows from the surface height irregularities of the illuminated portion of the work"

13 required by Claim 4.

14   Elan argues that inherent in the illumination disclosed in Claim 4, is the concept of grazing

15 angle, and thus the angle of incidence must be between 5 and 20 degrees. In support of its position

16 Elan relies on the following line in the specification: "A surprisingly wide variety of surfaces create

17 a rich collection of highlights and shadows when illuminated with a suitable angle of incidence.

18 That angle is generally low, say, on the order of five to twenty degrees, and we shall term it a

19 'grazing' angle of incidence" and argues that anything outside 5 to 20 degrees therefore must not be

20 suitable by the terms of the specification.

21   A comparison of Claim 1 with Claim 4 indicates that a particular angle limitation should not

22 be included in the construction of Claim 4. Claim 1 specifies "an angle of incidence in the range of

23 about five to twenty degrees," whereas Claim 4 contains no such limitation. The plain language of

24 Claim 4 requires that the source of illumination produce a pattern of highlights and shadows, and

25 Elan may very well be correct that nothing outside of a 5-20 degree range will produce such a

26 pattern, but that is a question of fact for future determination. The Court declines to construe

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1 "source of illumination" in Claim 4 as requiring an angle. The Court declines to further construe the

2 phrase at this time.

3   4.   "illumination producing a pattern of highlights"

4   Avago submits that this phrase does not require construction and that the ordinary meaning

5 applies. Elan proposes that "illumination producing a pattern of highlights" be construed to mean

6 "the arrangement of highlights produced by the source of illumination as a result of its unique

7 grazing angle." Based on the Court's determination that the claim should not be limited to a

8 particular "grazing angle," the Court declines to further construe the phrase "illumination producing

9 a pattern of highlights."

10 **B.   '804 Patent**

11   The parties agree that the '780 patent is a continuation-in-part of the '804 patent. However,

12 because "[t]he proper claim construction is the ordinary and customary meaning . . . that the term

13 would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of

14 the effective filing date of the patent application," LG Elec., Inc. v. Bizcom Elec., Inc., 453 F.3d

15 1364, 1375 (Fed. Cir. 2006) (internal quotation omitted), the Court may not simply permit intrinsic

16 evidence regarding terms of the '780 patent to have the same weight as the specification and the

17 prosecution history of the '804 patent itself.

18   Claim 14 of the '780 patent reads in its entirety as follows:

19   14. A method of controlling movement of a cursor of a video display comprising
              steps of:
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              providing a hand-holdable device having a two-dimensional array of photosensors;
21
              tracking movement of said device relative to a region of an environment in which
22   said device resides, including substeps of:

23   (a) periodically forming largely overlapping images of a field of view of said array;

24   (b) storing a first image as a reference image;

25   (c) correlating said images such that changes in location of characteristics of said
              region within successive images are computationally recognized;
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              in response to said substeps (a), (b) and (c), forming a cursor-control signal that
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1   corresponds to computational recognition of said changes in location; and

2   transmitting said cursor-control signal to said video display.

3   Patent citations in this section refer to the '804 patent unless otherwise indicated.

4   At this time, the Court is only being asked to construe Claim 14, which is an independent

5   claim. Claim 14 is a method claim that requires use of a "hand-holdable device having a two-

6   dimensional array of photosensors." The parties have not asked for construction of this "device."

7   The Court invites the parties to stipulate to a construction or provide evidence with respect to any

8   construction of the phrase "hand-holdable device having a two-dimensional array of photosensors."

9   1.   "tracking movement of the device relative to a region of an environment in which

10   said device resides"

11   Avago proposes that the above phrase be construed as "tracking movement relative to

12   features in the environment where the device operates." Elan proposes the following construction:

13   "Tracking changes in the position and angular orientation of the device in a three-dimensional

14   environment."

15   Claim 14 is not limited to a device that tracks angular rotation. The written description

16   describes translating pitch as vertical movement, and yaw as horizontal movement, but then states

17   that "[i]n this embodiment, translational movement of the device may also be detected and utilized,

18   so that vertical and horizontal movement of the device translates to a corresponding vertical or

19   horizontal movement of the screen cursor." Col. 4, ll. 15-21. Furthermore, the doctrine of claim

20   differentiation suggests that the Court should not construe Claim 14 as limited to angular movement,

21   as Claim 15 specifically adds the limitation of angular movement.

22   The remainder of the contested claim language, "environment in which said device resides,"

23   refers to a three-dimensional environment. The plain and ordinary meaning of "environment" is as

24   three-dimensional space --unlike a point, a line, or a plane. Furthermore, "environment" as used in

25   the claim language is specified as that "*in which* said device resides." Claim 14 (emphasis added).

26   The residence of the device is distinguishable in the plain and ordinary lexicon from a planar surface

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1 *on which* the device operates. Such a distinction is also supported by the patent's description of the

2 problem the invention was intended to solve: "The concern is that there may not be a suitable planar

3 operating surface that is convenient to the operator." Col. 1, ll. 63-65.

4   Avago argues that the device may not be limited to necessarily being capable of operating in

5 three dimensions. Whether the device claimed by Claim 14 operating in only two dimensions would

6 infringe on a device that is capable of operating in three dimensions is a question for a later stage in

7 this litigation. For the purposes of construing the claims in this patent in light of the specification,

8 "environment in which said device resides" means **"the three-dimensional space in which said**

9 **device may operate,"** and thus, "tracking movement of the device relative to a region of an

10 environment in which said device resides" is construed to mean **"tracking movement of the device**

11 **relative to a region of the three-dimensional space in which said device may operate."**

12   2.   "periodically forming largely overlapping images of a field of view of said array"

13   Avago proposes that "periodically forming largely overlapping images of a field of view of

14 said array" be construed as "images of a field of view of the photosensor array are formed at regular

15 intervals of time. The images overlap such that there are features in common in successive images."

16 Elan submits that "periodically forming largely overlapping images," is impossible to construe

17 because "largely overlapping images" is indefinite. As to the remainder of the claim language, Elan

18 proposes that "a field of view of said array" means "an area of the three-dimensional environment in

19 which the device resides that can be viewed by the array."

20   The Court does not find "largely" to be indefinite simply because there is no specific quantity

21 by which the images must overlap. As construed consistent with its plain and ordinary meaning,

22 "largely" provides sufficient guidance to a person of ordinary skill in the art. Based on the Court's

23 determination that the device disclosed in Claim 14 is one which may operate in a three-dimensional

24 environment, the Court declines to further construe this phrase.

25   3.   "storing a first image as a reference image"

26   Agilent construes the above phrase as "storing a first set of pixel values, in which each pixel

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1 value is indicative of light intensity received at a particular photosensor at a specific time." Elan

2 submits that the phrase, properly construed, means "storing a first set of pixel values representing a

3 field of view of the array as the reference image."

4   The method by which a reference image is acquired is detailed in the '804 patent: "The

5 two-dimensional array of photosensors is used to acquire a reference frame for tracking attitude of

6 the device." Col. 3, ll. 28-30. The patent also describes the optics of the photosensors that acquire

7 the reference frame: "While not critical, the device includes optics which provide a focus nominally

8 at infinity, intentionally presenting an off-sharp image to the array of photosensors." Col. 3, ll. 35-

9 38. The remainder of the written description similarly includes a disclosure of the reference image

10 as captured by an array of photosensors. Absent any other indication that the reference image could

11 be acquired by any other means, the Court reads the claims in light of the specification and construes

12 "storing a first image as a reference frame" as **"storing a first set of pixel values representing that**

13 **which is captured by the array of photosensors as the reference image."**

14   <u>4.</u>   <u>"correlating said images such that changes in location of characteristics of said region</u>

15   <u>within successive images are computationally recognized"</u>

16   Avago submits that the above claim language means "comparing an arrangement of pixel

17 values from the first image with an arrangement of pixel values from the second image. The

18 comparison mathematically detects changes in location of common features of the environment in

19 the successive images." Elan proposes the following construction: "Comparing the first set of pixel

20 values with one or more subsequent sets of pixel values to recognize calculated changes in location

21 of features viewed by the array within the three-dimensional environment in the first set of pixel

22 values with relation to features in one or more subsequent sets of pixel values." Given the Court's

23 determination that Claim 14 discloses a device capable of tracking changes in a three-dimensional

24 environment, further construction of this term is unnecessary.

<center>V. CONCLUSION</center>

26   The parties shall meet and confer to develop a joint case management statement, which shall

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1   be filed no later than September 8, 2006. The Court will conduct a case management conference on

2   September 18, 2006 at 10:00 a.m.

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4   Dated: August 18, 2006   /s/ James Ware

04cv5385cc   JAMES WARE

5   United States District Judge

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1 **THIS IS TO CERTIFY THAT COPIES OF THIS ORDER HAVE BEEN DELIVERED TO:**

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   Dated: August 18, 2006   **Richard W. Wieking, Clerk**
8

9   **By:_/s/ JW Chambers_____**
                                                    Snooki Puli
10   **Courtroom Deputy**

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